

ERRORLESS LEARNING

CHARACTERISTICS OVERVIEW CHART

Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
<input type="checkbox"/> Nonverbal <input checked="" type="checkbox"/> Mixed <input checked="" type="checkbox"/> Verbal	<input checked="" type="checkbox"/> PK <input checked="" type="checkbox"/> Elementary <input type="checkbox"/> Middle/High	<input checked="" type="checkbox"/> Classic <input type="checkbox"/> High Functioning	<input checked="" type="checkbox"/> (Pre)Academic/Cognitive/Academic <input type="checkbox"/> Adaptive Behavior/Daily Living <input type="checkbox"/> Behavior <input checked="" type="checkbox"/> Communication/Speech <input type="checkbox"/> Social/Emotional

BRIEF INTRODUCTION

Children with autism (AU) share common characteristics in learning. For example, they adhere rigidly to routines and tend to over-select and over-generalize responses to failure or novel tasks. Therefore, errorless learning, which limits an incorrect response in a learning situation, is ideal for this group of students.

DESCRIPTION

Errorless learning, a procedure introduced by Terrace (1963), is a type of discrimination learning that decreases or eliminates the opportunity for incorrect choice selection, therefore maximizing the possibility of a correct response. Simply put, errorless learning allows learning to occur with few or no negative stimuli. The theory behind errorless learning is that error responses have negative effects, especially for children with autism, given their rigid adherence to rules (Green, 1996; Smith, 2001; Smith, Iwata, Goh, & Shore, 1995).

Errorless learning offers the following benefits:

- Minimizes the number of errors
- Increases overall time available for instruction
- Reduces the likelihood that errors will be repeated in future trials
- Reduces frustration and the occurrence of inappropriate emotional behaviors by increasing opportunities for reinforcement

In errorless learning, children only learn the correct skill. That is, the teacher teaches in such a manner that students do not make any mistakes. As a result, they do not learn an incorrect skill that will have to be corrected or re-taught.

STEPS

Guidelines for using errorless learning are as follows:

1. Identify and teach the child the desired behavior.
2. Identify prompts that will ensure success.
3. Have the child begin to perform the response.
4. Provide prompts to make sure the child performs the desired behavior correctly.
5. If behavior/response is incorrect, increase prompt to make the child successful.
6. Repeat the trial several times until the child appears to be able to demonstrate the desired behavior correctly and independently.
7. Following a specified number of non-prompted behavior, conduct a trial to assess the child's correct or incorrect learned behavior.
8. Finish the lesson on a successful trial with appropriate reinforcement.
9. Fade or decrease prompting as soon as indicated by data collection.

BRIEF EXAMPLE

Ms. Cooper utilized errorless learning techniques in teaching John, a 3-year-old boy with autism, to recognize his body parts. She asked John to touch the body part that she named. At first, Ms. Cooper provided a full prompt by taking John's hand and touching the correct body part. She gave John a small cookie as a reinforcer whenever he finished the task.

After three trials, Ms. Cooper faded the prompt by merely lifting John's hand toward the correct body part. When John successfully performed the task, he received a small cookie. When John failed to perform the task, Ms. Cooper prompted him through the task and provided a reinforcer. Gradually, Ms. Cooper faded prompts. After several trials, John could successfully perform the task with no prompts.

SUMMARY

Errorless learning is a set of teaching techniques designed to reduce incorrect responses as the child gains mastery of a novel task. It has been contrasted with trial and error learning in which the child attempts a task and then benefits from feedback. This strategy is an effective way in which to teach a variety of skills to individuals with autism.

RESEARCH TABLE

Number of Studies	Ages (year)	Sample Size	Area(s) Addressed	Outcome
2	3-7	6	Word acquisition, discriminative labels	+

STUDIES CITED IN RESEARCH TABLE

1. Leaf, J.B., Sheldon, J.B., Sherman, J.A. (2010). Comparison of simultaneous prompting and no-no prompting in two-choice discrimination learning with children with autism. *Journal of Applied Behavior Analysis*, 43(2), 215-228.
The effectiveness of and preference for instructional techniques involving two prompting systems were evaluated for 3 children with ASD using a parallel treatments design. Both prompting systems led to acquisition of target skills (matching tasks), but No-No prompting was both more effective and more efficient than simultaneous prompting for all three participants. Preferences for either prompting procedure were mixed.
2. Goldsmith, T. R., LeBlanc, L. A., & Sautter, R. A. (2007). Teaching intraverbal behavior to children with autism. *Research in Autism Spectrum Disorders*, 1, 1-13.
In this study, three children with autism were successfully taught to name items associated with preselected categories (e.g., "What are some colors?") with limited generalization to a fourth, non-targeted category. Limited maintenance of skills was found.

REFERENCES

- Goldsmith, T. R., LeBlanc, L. A., & Sautter, R. A. (2007). Teaching intraverbal behavior to children with autism. *Research in Autism Spectrum Disorders*, 1, 1-13.
- Green, G. (1996). Behavioral intervention for autism. In C. Maurice, G. Green, & S. C. Luce (Eds.), *Behavioral interventions for young children with autism* (pp. 29-42). Austin, TX: Pro-Ed.
- Leaf, J.B., Dotson, W. H., Oppenheim, M. L., Sheldon, J.B., & Sherman, J.A. (2010). The effectiveness of group teaching interactions for young children with autism. *Research in Autism Spectrum Disorders*, 4, 186-198.
- Smith, T. (2001). Discrete trial training in the treatment of autism. *Focus on Autism and Other Developmental Disabilities*, 16, 86-92.
- Smith, R. G., Iwata, B. A., Goh, H., & Shore, B. A. (1995). Analysis of establishing operations for self-injury maintained by escape. *Journal of Applied Behavior Analysis*, 28, 515-535.
- Terrace, H. S. (1963). Discrimination learning with and without "error." *Journal of the Experimental Analysis of Behavior* 6, 1-27.

RESOURCES AND MATERIALS

- LEARNet Problem-Solving System and Resource:
http://www.projectlearn.net.org/tutorials/errorless_learning.html
This URL links the user to the errorless learning tutorial of the Brain Injury Association of New York. It includes a video illustration and several practical application tips.
- Errorless Learning/Teaching. ASAT (Association for Science in Autism Treatment):
<http://www.asatonline.org/intervention/procedures/errorless.htm>
This site provides a research summary and recommendation on this intervention.

GENERAL RESOURCES

- Autism Internet Modules (AIM) www.autisminternetmodules.org. The Autism Internet Modules were developed with one aim in mind: to make comprehensive, up-to-date, and usable information on autism accessible and applicable to educators, other professionals, and families who support individuals with autism spectrum disorders (ASD). Written by experts from across the U.S., all online modules are free, and are designed to promote understanding of, respect for, and equality of persons with ASD.
- The Autism Web Course: http://cdd.unm.edu/swan/autism_course/about/index.htm. This web course was developed out of materials from the Interactive Collaborative Autism Network (ICAN). The Autism Programs at the University of New Mexico has updated and added information to this web course.
 - Characteristics
 - Assessment
 - Academic Interventions
 - Behavioral Interventions
 - Communication Interventions
 - Environmental Interventions
 - Social Interventions
 - Family Support Suggestions
- Indiana Resource Center for Autism (IRCA) <http://www.iidc.indiana.edu/irca/fmain1.html>. The Indiana Resource Center for Autism staff's efforts are focused on providing communities, organizations, agencies, and families with the knowledge and skills to support children and adults in typical early intervention, school, community, work, and home settings.
 - IRCA Articles: <http://www.iidc.indiana.edu/index.php?pageId=273>
- Texas Statewide Leadership for Autism www.txautism.net. The Texas Statewide Leadership for Autism in conjunction with the network of Texas Education Service center with a grant from the Texas Education Agency has developed a series of free online courses in autism. Please check the training page, www.txautism.net/training.html, for update lists

of courses, course numbers and registration information. Current courses include the following:

- Asperger Syndrome 101
- Augmentative and Alternative Communication and the Autism Spectrum
- Autism for the General Education Teacher
- Autism 101: Top Ten Pieces to the Puzzle
- Classroom Organization: The Power of Structure for Individuals with ASD
- Communication: The Power of Communication for Individuals with ASD
- Futures Planning for Students with Autism Spectrum Disorder
- Navigating the Social Maze: Supports and Interventions for Individuals with ASD
- Solving the Behavior Puzzle: Making Connections for Individuals with ASD